



HAMPTON HARBOR BRIDGE

Public Information Meeting

January 30, 2019



Agenda



- Welcome and Introductions
- Project Update
- Update on Environmental and Cultural Resource Coordination
- Project Alternatives
- Bridge Rehabilitation Study
- Traffic Study
- Alignment Study
- Next Steps

Project Update

- Completed assessment of existing conditions of bridge (summer/fall 2018)
- Prepared Traffic Study (fall 2018)
- Prepared Rehabilitation Study (fall 2018)
- Prepared Alignment Study (fall/winter 2018)



Looking south

Project Update

- Met with vessel users (October 2018)
- Met with Project Advisory Committee (November and December 2018)
- Met with abutters (December 2018)



First Public Information Meeting

Environmental Resources



Seabrook approach

- Completed field investigation for wetlands and Wetland Report (summer/fall 2018)
- Completed field inspection surveys for NLEB (summer/fall 2018)
 - ▶ Bridge structure
 - ▶ Pumphouse structure
- Completed field survey for habitat types (summer/fall 2018)
- Completed field survey for listed plant species (summer/fall 2018)
- Natural Resources Agency Coordination Meeting (January 2019)

Cultural Resources



Bridge looking north

- Completed Phase 1A Archaeological Assessment (fall 2018)
- Completed Project Area Form (fall 2018)
- Completed Individual Inventory Form for bridge (fall/winter 2018)
- Identified additional properties for further investigation and initiated documentation (fall/winter 2018)
- Undertook site walk with NH Division of Historical Resources and consulting parties (January 2019)

Purpose and Need

Purpose

- Provide a safe, reliable, and structurally sound crossing
- Improve mobility for the travelling public (vehicles, bicyclist, and pedestrians) and marine users

Need

- Structurally deficient and functionally obsolete bridge
- Many original mechanical components and outdated electrical system
- Substandard shoulder and sidewalk widths



Deteriorated pinion and coupling, key elements of lift mechanism – Interim Repairs in 2018

Project Alternatives



- Three alternatives under consideration
 - ▶ Rehabilitation
 - ▶ Replacement with Fixed Bridge
 - ▶ Replacement with Bascule Bridge
- Various alignment options and heights

Bridge Rehabilitation Study

Study of Rehabilitation Alternative

- Assessed rehabilitation for current capabilities, long term viability and for serving the purpose/need of project
- Requires significant modifications to carry current design loads, even without widening
- Insufficient capacity for widened roadway
- Geometry of bascule pier restricts ability to update mechanical systems



Typical Bridge Underside

Study of Rehabilitation Alternative

- Two Rehabilitation Alternatives under consideration
 - ▶ Replacement of full superstructure to widen bridge
 - ▶ Second movable bridge
- Bridge would need to be modified to carry modern design loads
- Providing widened roadway to meet needs of travelling public requires replacement of the entire superstructure (all steel girders) and widening of piers



Bridge open to allow for vessel passage

Questions



- Before moving to the next section, please ask any questions you may have regarding
 - ▶ Natural and Cultural Resources
 - ▶ Rehabilitation Study



Bridge Looking West

Traffic Study

Traffic Study

- Roadway Element Assessment:
 - ▶ Travel Lane
 - ▶ Shoulders
 - ▶ Sidewalk
- Methodology
 - ▶ Evaluation of Existing Conditions
 - ▶ Projected Growth and Future Volumes
 - ▶ Coordination with local and regional planning commissions
 - ▶ Proposed Conditions - Rehabilitation, New Bascule, & New Fixed Bridge
 - ▶ Propose widths of roadway elements based on study

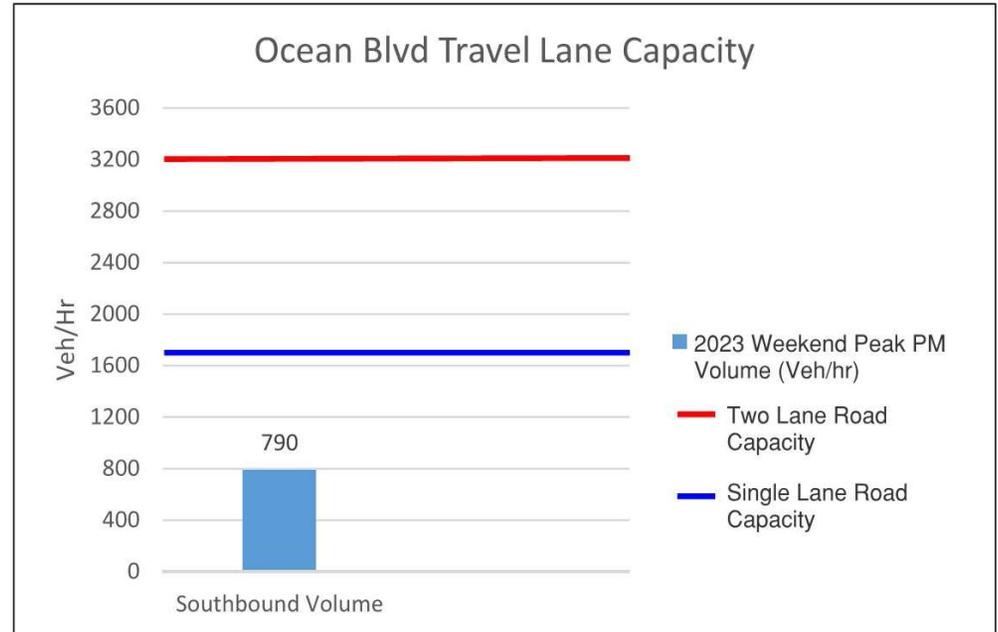


Looking downward at bascule span

Traffic Study – Roadway Capacity



- Lane Number Determination
 - ▶ Considered 2, 3, & 4 Lane Options
- Analyzed capacity of lanes in bridge area
 - ▶ Capacity substantially higher than traffic volumes across bridge
- Bascule operations impact on traffic flow investigated
 - ▶ Current lanes sufficient to clear queues between lifts
- 3 and 4-Lane Cross Section Provides Minimal Benefit based on roadway capacity at bridge
 - ▶ Creates more challenging pedestrian crossings
 - ▶ High volume of U-turns at Ashworth
- 2-Lane Option Selected

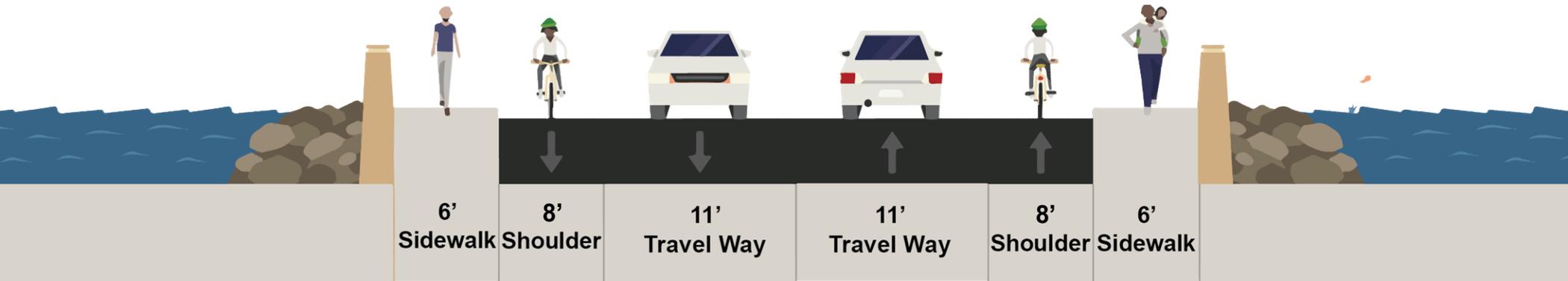


Shoulder and Sidewalk



- Shoulder Width Considerations
 - ▶ Requirements and Guidelines for Bicyclists - 6'-8'
 - ▶ Debris and Bridge Scuppers Limit Useable Shoulder Width
 - ▶ Wider shoulders provide improved ability for Emergency Vehicles to Pass
- Sidewalk Width Considerations
 - ▶ Hampton Beach Master Plan (HBMP) Goals to Improve Pedestrian and Bicycle Safety & Provide Greater Connectivity to Resources North and South of Bridge
 - ▶ Pedestrian Desire Lines on East and West Sides of Bridge
 - ▶ Opportunities for Mix of Travel Speeds and Activities (Fishing, Biking, Walking)

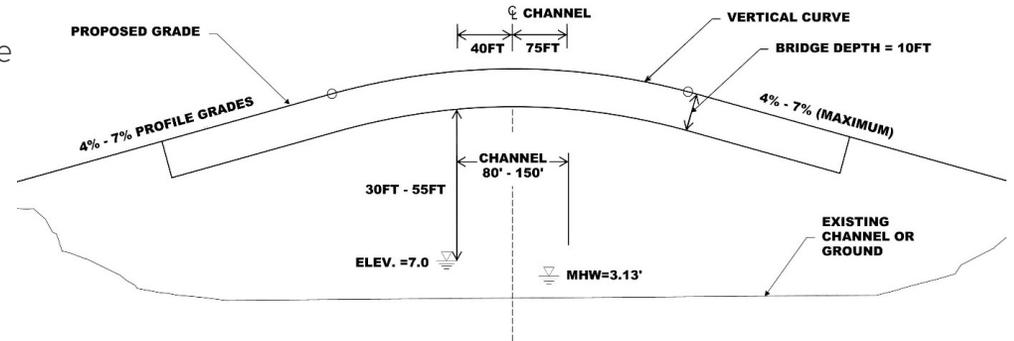
Roadway Cross Section



Alignment and Profile Study Introduction

Key Variables

- Roadway slope
 - ▶ Steeper slopes reduce approach impacts and improve navigation
 - ▶ Flatter slopes improve vehicular, bicyclist and pedestrian access
- Vessel Navigation Clearances
 - ▶ Higher clearances improve navigation and reduce impacts to roadway traffic
 - ▶ Lower clearances reduce approach impacts
 - ▶ Sea Level Rise
- East vs West vs Existing Alignment
 - ▶ Impacts of both alignments must be considered
- Impacts on Roadway Approaches
 - ▶ Informs impacts to resources, right-of-way and facilities on approaches
- Constructability and Cost
 - ▶ Full cost estimates not developed at this stage, but qualitatively considered



Roadway Slope	Serviceability for Ped and Bike
3%-4%	Desirable for Pedestrians and Bicyclists
5%-6%	Acceptable Per Code Requirements
7% or More	Less Desirable

Navigational Clearances

- Bascule Bridge
 - ▶ Height increases do not need to pass all vessels
 - ▶ Horizontal Clearance allows clearance of USACE dredge equipment
 - ▶ Decreases required lifts
- Fixed Bridge
 - ▶ Height may restrict future navigation
 - ▶ Must serve needs of navigational users
 - ▶ Future use must be considered
 - ▶ Horizontal Clearance matches navigational channel width



Existing Navigational Clearances per Coast Surveys at Mean High Water

Navigational Clearances



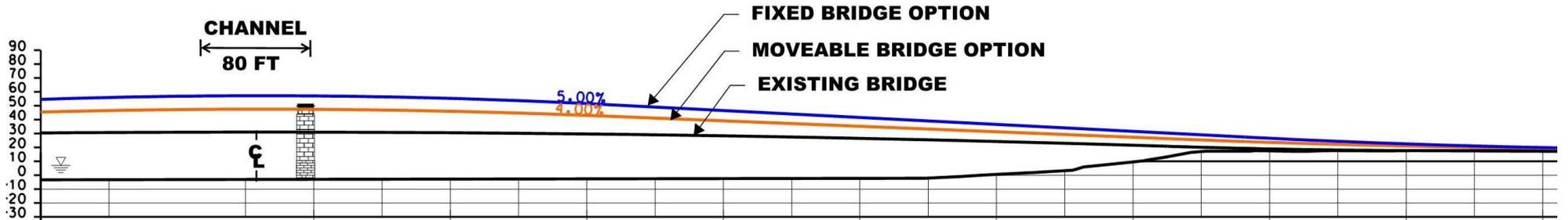
- Bascule Bridge
 - ▶ Proposed channel clearance: 80' Width, 34' Height with bridge in down position
- Fixed Bridge
 - ▶ Proposed channel clearance: 150' Width, 44' Height
 - ▶ 59' Height considered, not carried forward pending review by agencies
- Clearances include 3.9' Sea Level Rise
 - ▶ “Intermediate-High” range of estimated 2100 rise by NH Coastal Risk and Hazards Commission 2016 Report

Vertical Underclearance (from MHW)	Approx. Percentage of Lifts Eliminated
59'	Greater than 97%
44'	Greater than 90%
34'	Greater than 55%
18'	Current Clearance

MHW: Mean High Water

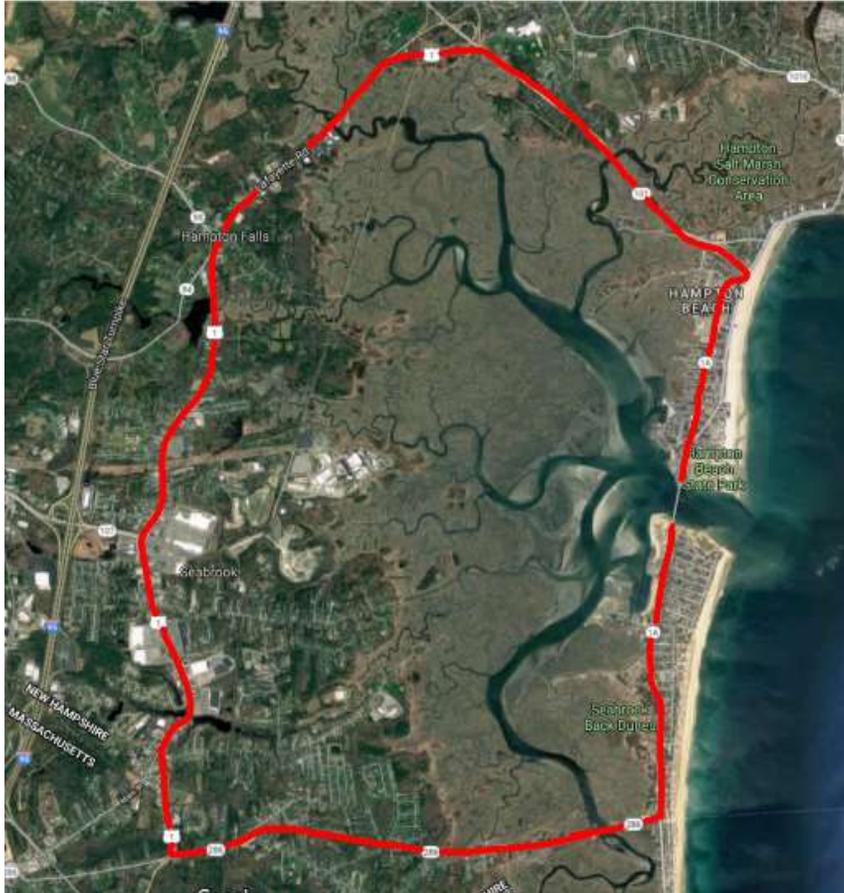
Note: Percentages listed are minimum passed based on available information. Percent of lifts eliminated may be higher as additional vessel user information becomes available.

Navigational Vertical Clearance



Alignment and Profile Study Review of Alignment Options

Horizontal Alignment - Online



- ▶ Full Closure w/ Regional Detour
 - Construction Schedule 2+ years depending on Environmental Restrictions
 - Required detour is approx. 12 miles
- ▶ Temporary Bridge Required
 - Increases Cost Significantly – on the order of \$20 million or more based similar project
 - Lengthens Construction Duration by 1 year or more for construction of temporary moveable bridge

Detour Map

Horizontal Alignments – East and West



West Alignment Assets	East Alignment Assets
Businesses	Residences
State Pier	State Park
Conservation Area	Sensitive Habitat
Beach	Beach
Hampton and Seabrook Channels	Entrance Channel
Utilities	

Identified Assets in Area

- Potential Archeological Sensitivity
- Residences
- Potential Section 4(f) Property
- Potential Section 6(f) Property
- Commercial Properties
- Project Area
- Sensitive Habitat
- Historic Property
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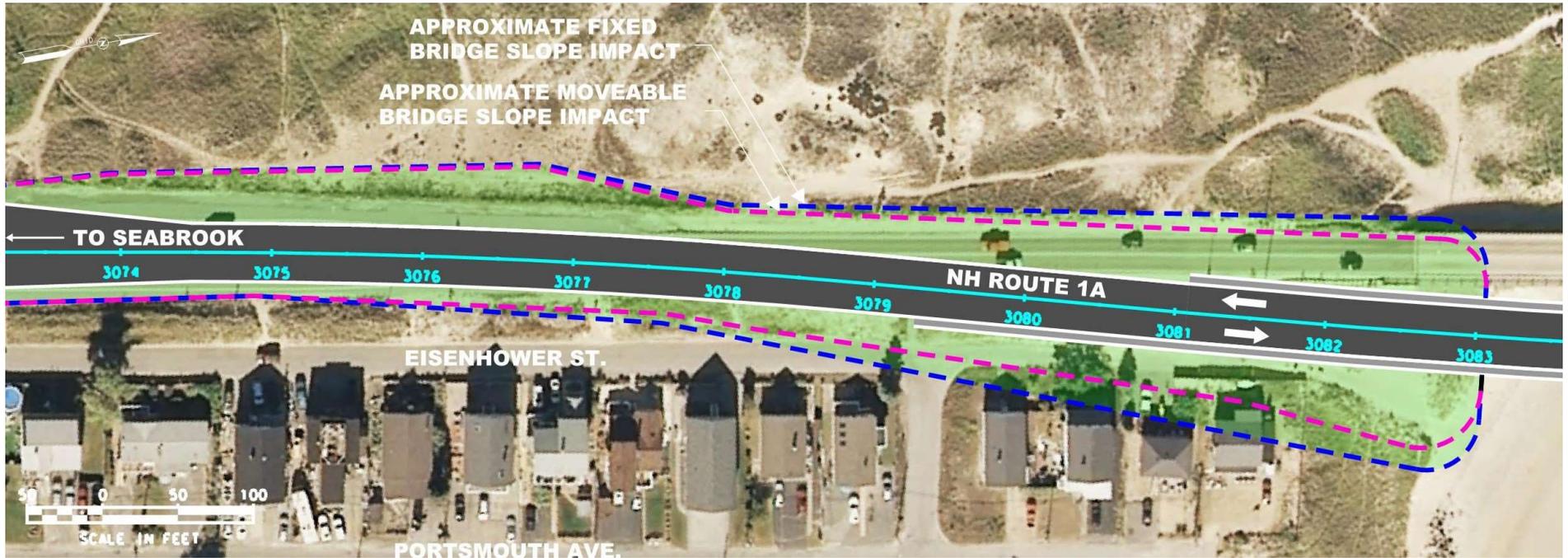
Eastern Alignment



Eastern Alignment



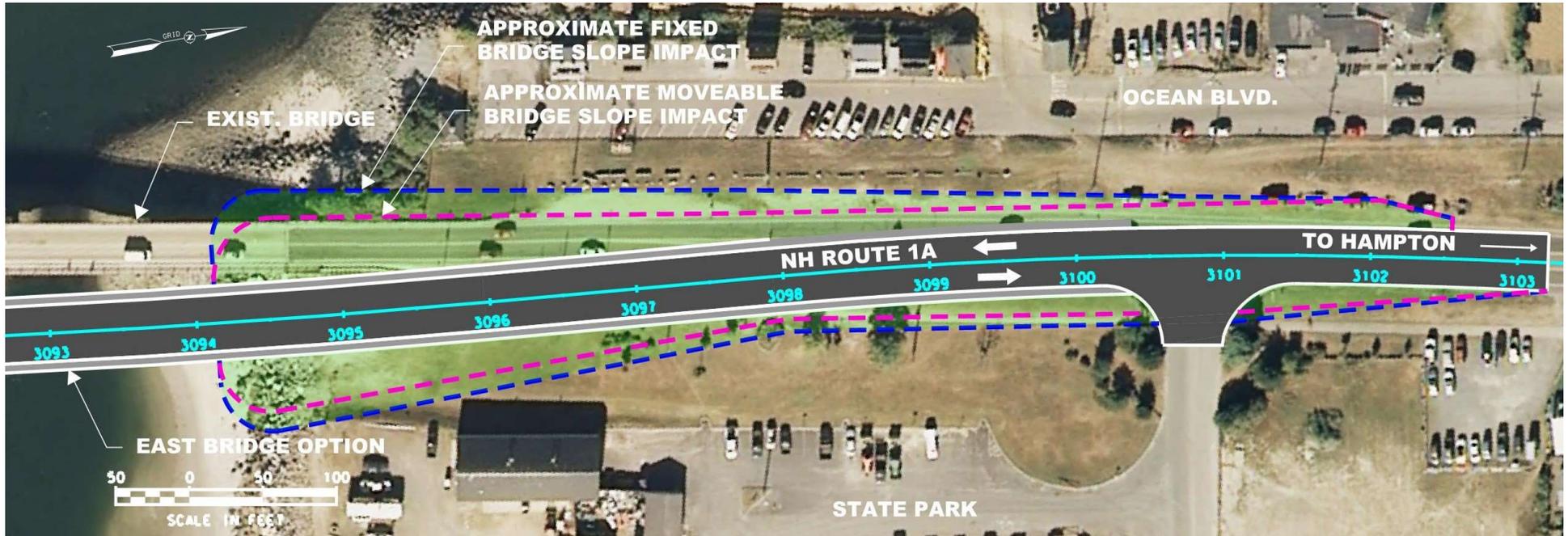
South Approach



Eastern Alignment



North Approach

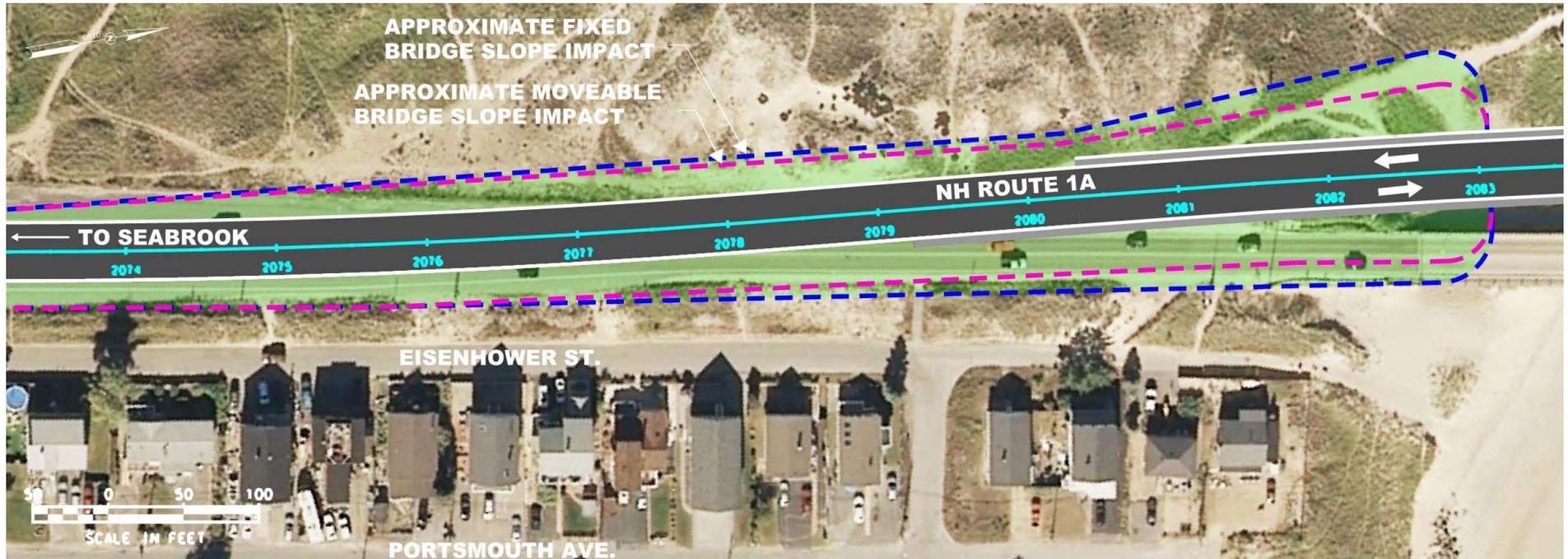


Western Alignment



Western Alignment

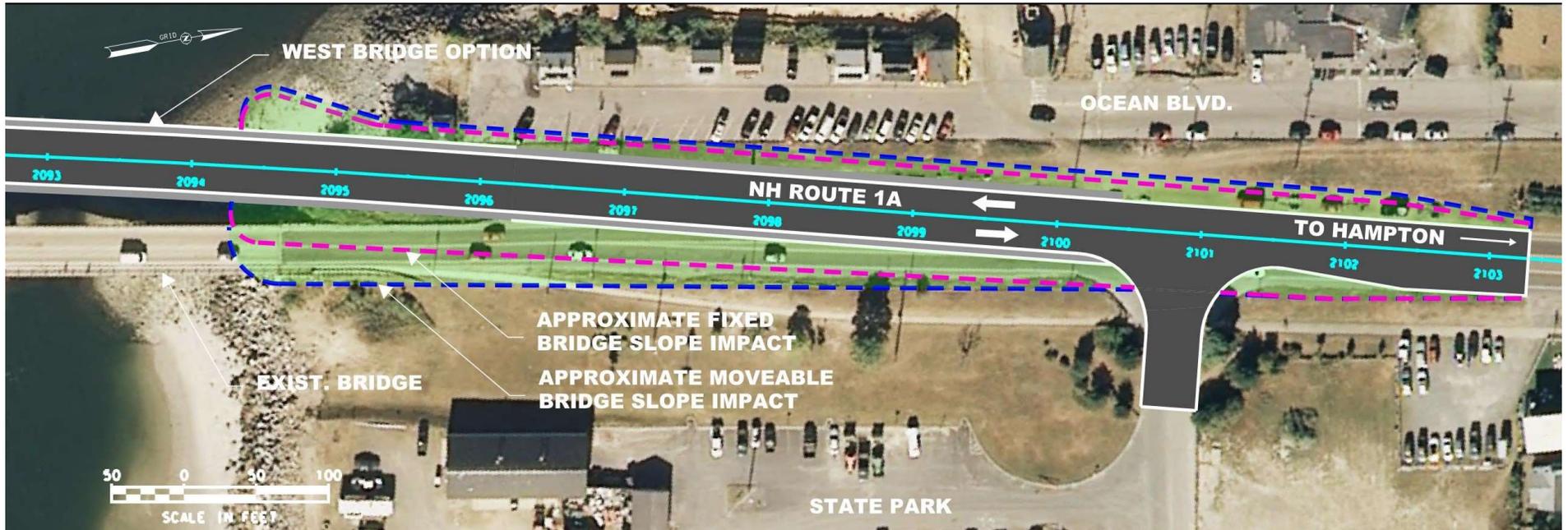
South Approach



Western Alignment



North Approach



Horizontal Alignments - Offline



Eastern Alignment



Western Alignment

Summary of Alignment Impacts



West Alignment	East Alignment
Underwater and Underground Utilities	Underground Utilities
Hampton and Seabrook Channel	Entrance Channel
Beach usage at South Abutment	Beach usage at South Abutment
Sensitive Habitat / Conservation Area	Sensitive Habitat
Potential Impact to Businesses And Driveway	Impacts to State Park Entrance
	Impacts to homes on SE quadrant

Questions



- Before moving to the next section, please ask any questions you may have regarding
 - Alignment and Profile Study



Bridge Looking West

Conceptual Bridge Renderings

Summary – Bascule Bridge, 34' Clearance



- Provides improved underclearance for vessels
 - ▶ Clears USACE dredging equipment
 - ▶ Reduces lifts by over 50% based on current usage
 - ▶ Does not provide full 150' horizontal clearance
- Bridge will be required to lift and will still affect traffic
- Provides desirable roadway grade – 4% slope
- Smallest Impact on Approaches
 - ▶ Low height increase at abutment: 5' +/-
- Costs
 - ▶ Bascule Bridge - significantly higher capital costs compared to a fixed bridge
 - ▶ Higher risk of costs associated with serviceability – system breakdowns can impact vehicular and vessel traffic
 - ▶ Increased life cycle costs associated with operating the bridge and maintaining mechanical/electrical systems

Bascule Bridge – West Alignment



Aerial of Existing Bridge

Bascule Bridge – West Alignment



Aerial of Proposed Bascule Bridge

Bascule Bridge – West Alignment



Looking Southwest at North Approach

Bascule Bridge – West Alignment



Looking Southwest at North Approach

Bascule Bridge – West Alignment



Looking West at South Approach - Existing

Bascule Bridge – West Alignment



Looking West at South Approach – Proposed Bascule

Summary – Fixed Bridge, 44' Clearance



- Provides improved underclearance for vessels
 - ▶ Clears at least 90% of current lifts
 - ▶ Clears all regular users
 - ▶ Provides significant improvement for horizontal clearance – 150'
 - ▶ Clears USACE dredge equipment at low tide
- No bridge lifts required with fixed structure
- Provides acceptable roadway grade – 5% slope
- Balances impacts on approaches
 - ▶ Height increase at abutment: 10'±
- Fixed Bridge - significantly reduced capital and life cycle costs compared to a bascule bridge
- Bridge can be designed to carry utilities across the harbor

Fixed Bridge – West Alignment



Aerial of Existing Bridge

Fixed Bridge – West Alignment



Aerial of Proposed Fixed Bridge

Fixed Bridge – West Alignment



Looking Southwest at North Approach - Existing

Fixed Bridge – West Alignment



Looking Southwest at North Approach – Proposed Fixed Bridge

Fixed Bridge – West Alignment



Looking West at South Approach - Existing

Fixed Bridge – West Alignment



Looking West at South Approach

Next Steps



- Meet with NH Division of Historical Resources in February
- Continue to develop alternatives; Complete Type, Size and Location Study
- Ongoing meetings with Public Advisory Committee
- Continue coordination with US Coast Guard, US Army Corps of Engineers, other reviewing agencies
- Review study findings at Public Information meeting (spring/summer 2019)

Questions

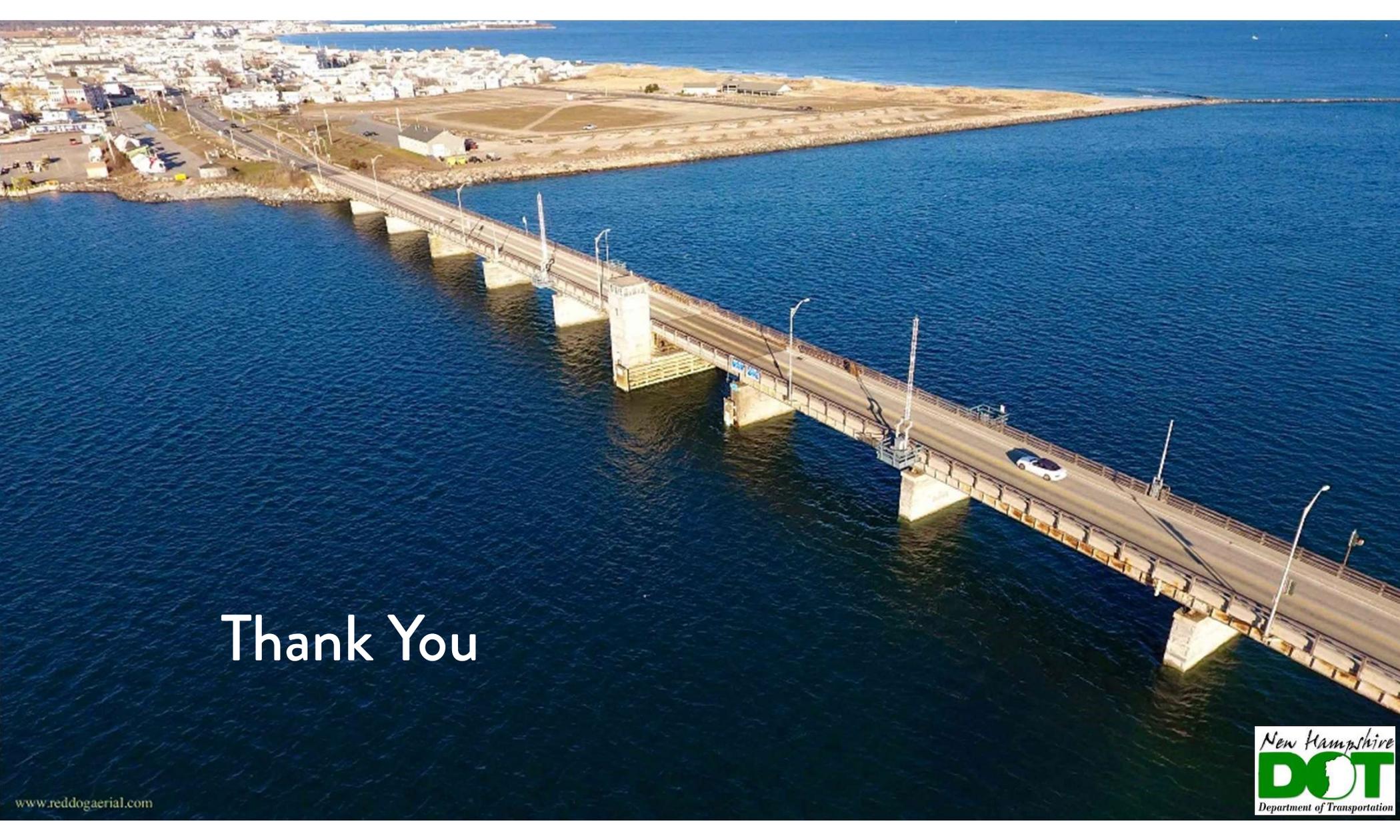


- Please ask any questions you may have regarding this presentation.



Bridge Looking West





Thank You

